

REMARKS

In response to the above-identified Final Office Action, Applicant seeks reconsideration thereof. In this response, no claims have been amended, no claims have been added and no claims have been cancelled. Accordingly, Claims 1-13 are pending.

I. Information Disclosure Statement Objection Under 37 CFR 1.98(a)(2)

In the outstanding Final Office Action ("Final Action"), the Examiner refuses to consider the information disclosure statement filed on 4/7/2004 for failing to comply with 37 CFR 1.98(a)(2) which requires a legible copy of each U.S. and foreign patent and all publications or portions thereof causing them to be listed. Applicant respectfully submits, all copies of the foreign patents and publications, except for JP56150694 and JP61025673, listed on the information disclosure statement filed on 4/7/2004 were submitted in the parent case. Please see Image File Wrapper for U.S. Application Ser. No. 10/354,491 shown on the Patent Application Information Retrieval System. In regard to foreign patents JP56150694 and JP61025673 they are included herewith for the Examiner's consideration.

II. Claims Rejected Under 35 U.S.C. §102

A. In the outstanding Final Action the Examiner rejects Claims 1-3, and 9-13 under 35 U.S.C. §102 as being anticipated by van der Linden et. al., U.S. Patent No. 4,732,412 ("Linden"). Applicant respectfully traverses the rejection for at least the reasons set forth below.

It is axiomatic that to anticipate a claim every element of the claim must be disclosed within a single reference. With respect to Claim 1, Applicant respectfully submits that Linden fails to disclose first and second pipe segments having a core and a composite reinforcement circumferentially surrounding the core. The Examiner asserts that asbestos cement jacket 15 constitutes the composite reinforcement. One of ordinary

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skill in the art would not understand asbestos cement to provide any increase in hoop strength or reinforcement to an underlying pipe. One of ordinary skill in the art would know that asbestos cement is an inherently brittle material, susceptible to cracking and has a low impact resistance. As evidenced by Linden, asbestos cement is used commercially as a barrier against water and corrosion, not a composite reinforcement to an underlying pipe as required by the instant claims. Thus, neither Linden nor the knowledge of the skilled artisan may be relied upon to teach at least this element.

Even if one were to accept for the sake of argument that asbestos cement constitutes a composite, it does not constitute a composite reinforcement. Applicant is entitled to be his own lexicographer. Composite reinforcement requires a resin matrix and suitably selected fibers. See page 4, lines 5-34. As asbestos cement constitutes neither of these elements. For at least this reason, the rejection of Claim 1 should be withdrawn.

With respect to Claims 10 and 12, the errors of Claim 1 are exacerbated. In Claims 10 and 12, there is an explicit claim to the improvement and hoop strength created by the joint tape. As an additional matter, Claim 10 is written in means plus function language. Thus, the broadest reasonable interpretation for composite reinforcement means and joint tape means are consistent with those structures described in the Specification. Nothing in Linden remotely discloses a structure analogous to that as described in Applicant's Specification. Thus, Claim 10 which is governed by U.S.C. §112, paragraph 6 cannot be anticipated by Linden as a matter of law.

Moreover, in regard to Claims 10 and 12, Applicant respectfully submits, these claims further recite the element of a joint tape overlaying the joined ends of the pipe segment to provide hoop strength and reinforcement. Specifically, Claim 10 recites a

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"joint tape means circumferentially overlaying the first ends adjacent the cutback region to provide hoop strength" and Claim 12 recites a "joint tape circumferentially overlaying the first and second pipe segments at the cutback region to provide hoop reinforcement."

There is no evidence whatsoever that the sleeve system of Linden provides increase hoop strength at the joint. Instead, Linden teaches the purpose of the invention and its components (i.e., jacket 5) are to provide a barrier against corrosion and water ingress. See Linden, col. 1, lines 10-15. A jacket 5 suitable for protecting against corrosion and moisture would not necessarily provide any sort of hoop strength or reinforcement to the underlying core. Thus, Linden itself does not support the Examiner's conclusion.

The Examiner cites to element 1 of Linden as teaching this element yet recognizes nowhere does Linden expressly teach element 1 provides hoop strength or reinforcement. See Final Action, page 3, paragraph 6; page 5. Instead, the Examiner states this limitation is met because it is an intended use that does not result in a structural difference from the prior art and further that element 1 inherently provides some hoop reinforcement. See Final Action, page 5. Applicant respectfully submits the Examiner is mistaken on both conclusions.

The structure of a material is determinative of whether the material will provide hoop reinforcement when applied to a pipe. Mere circumferential attachment of a sheet material 1 to the perimeters of first and second pipe segments, as stated by the Examiner, does not necessarily result in a material capable of providing hoop reinforcement. As evidenced by Applicant's specification, hoop strength may be reinforced where the overlying material has fibers running substantially in the circumferential direction with relatively few perpendicular fibers or where the fibers are

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of a particular density, number and strength. See Application, page 5, paragraph [0017]. Nowhere does Linden indicate the sheet material 1 has such features. Instead, Linden teaches element 1 is a polymeric material of a sleeve. See Linden, Col. 8, lines 21-23. The only requirement of the sheet is that it is capable of protecting the exposed pipe from the heat required for welding. See Linden, Col. 7, lines 41-46. Thus, there is no teaching in Linden that the polymeric material 1 of the sleeve possesses a structure capable of providing hoop strength or reinforcement to pipe segments. Moreover, material 1 would not necessarily provide hoop strength since Linden does not require such a quality and the Examiner has not shown that circumferential attachment alone would necessarily provide hoop strength to an underlying pipe. Thus, Linden further fails to teach or suggest at least this element as recited in Claims 10 and 12.

In respect to the dependent claims, they are patentable as dependent on patentable independent claims. However, with respect to Claims 3 and 13 while the Examiner makes the bald assertion that a primer coat is taught by Linden the Examiner fails to point to any such teaching and Applicant has been unable to find any such teaching in the reference. Accordingly, for this additional reason, the rejection of Claims 3 and 13 should be withdrawn. Moreover, with respect to Claim 4, the assertion that a tape is made of a resin material is necessarily saturated with a resin material as erroneous as a matter of law. By way of example, a tape may be made entirely of a resin. However, the plain meaning of the term saturate requires at least one additional material that is not the resin otherwise is not possible for there to be saturation. Additionally, the resin may be on an impermeable backing, which would also not permit saturation. Applicant refers the Examiner to any standard dictionary which will provide a definition such as, to fill completely with something that permeates or

pervades. It is nonsensical to refer as a resin saturated by itself. For this additional reason, the rejection of Claim 4 should be withdrawn.

With respect to Claim 9, the Examiner has not pointed to and Applicant has been unable to discern that any teaching or suggestion in Linden of at least one line of hot melt running a warped direction to stabilize the plurality of weft fibers. The Examiner has merely asserted that the reference teaches one line hot melt running a warped direction. While Applicant does not agree with this characterization, the Examiner has not even pointed to a citation or reference in support of this assertion, the Examiner has appeared to ignore the modifying clause of Claim 9 and for this additional reason, the rejection of Claim 9 should be withdrawn.

In view of the foregoing, it is respectfully requested that the final rejections of Claims 1-3, 9-13 under 35 U.S.C. §102 as being anticipated by Linden be withdrawn.

B. In the outstanding Final Action the Examiner further rejects Claims 1, 4-7 and 10-11 under 35 U.S.C. §102 as being anticipated by Galloway, U.S. Patent No. 3,053,724 ("Galloway").

As an initial matter, it is noted that Claims 10 and 11 are written in means plus functional language and therefore govern by U.S.C. §112, paragraph 6. Thus, the Examiner is obligated to find structures analogous to those disclosed within the specification in the effort to anticipate Claims 10 and 11. Galloway does not provide such structures. Accordingly, it is respectfully submitted that the rejection of Claims 10 and 11 under 35 U.S.C. §102 should be withdrawn.

In regard to Claim 1, Applicant respectfully submits that Galloway fails to teach at least the element of a first and second pipe segment each having a core and a composite reinforcement circumferentially surrounding the core. Galloway teaches a method of splicing sections of a heavy-duty discharge hose. Galloway teaches that the

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hose is comprised of an inner rubber or comparable tube with a plurality of plies of rubber impregnated fabric would spirally around the inner tube. See Galloway, Col.2, lines 27-35. The Examiner alleges elements 2 and 2' teach first and second pipe segments, respectively, and 4, 4' teach a composite reinforcing circumferentially surrounding the core of each segment. See Final Action, page 3, paragraph 7.

Applicant respectfully disagrees with the Examiner's characterization of Galloway and submits the teachings of Galloway prevent the Examiner's conclusion that the "flexible hose" of Galloway teaches Applicant's claimed "pipe." The Examiner relies entirely on the definition of "pipe" found in Webster's dictionary to support his conclusion that a "flexible hose" is a "pipe." See Final Action, page 5. Such reliance is inappropriate where the reference itself consistently uses the term "pipe" to mean something else. Galloway itself explicitly distinguishes between "pipes" and flexible hoses. Thus, the reference belies the Examiner's interpretation. In particular, Galloway expressly teaches that elements 26, 28 are "pipes." See Galloway, col. 4, lines 12-16; Figure 1. Galloway further teaches that "pipes" 26, 28 are connected with "flexible hoses." See Galloway, col. 4, lines 22-25. As illustrated by Figure 1 and taught by the specification, pipes 26,28 are functionally and structurally different from the flexible hose sections 2,2'. Thus, construing "flexible hose" to mean a "pipe" as suggested by the Examiner is inconsistent with the manner in which the terms are used in Galloway and would render the teachings of Galloway nonsensical and redundant. It is well settled that the manner in which terms are consistently used throughout the specification must prevail over an inconsistent alternative meaning, therefore the Examiner's reading must fail. *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1335 (Fed. Cir. 2001). Accordingly, the Examiner has not shown, and Applicant

has been unable to discern, any portion of Galloway teaching a first and second pipe segment having a core and composite reinforcement.

As an additional matter, Applicant's claims require that the ends of the pipe segments be joined together. There is no teaching or suggestion in Galloway that the segments of Galloway are joined (e.g., welded together), rather the segments are retained in adjacent relation while overlaid with various layers of additional material. Since Galloway fails to teach each element of Claims 1 and 10, anticipation may not be found.

With respect to Claim 4, the Examiner's finding of rubber impregnated tire cord fabric in Galloway still fails to teach or suggest a resin saturated reinforcement tape as claimed. First, the rubber is not a resin as the term is conventionally understood and second, there is no indication that the impregnated rubber "saturated" the reinforcement tape. At least for this reason, the rejection of Claim 4 should be withdrawn.

Moreover, with respect to Claim 6, Claim 6 further recites the element of a resin reinforcement tape comprised of a warp-dominated fiber material. The Examiner alleges this element is taught in Col. 3, lines 45-52 of Galloway. Applicant has reviewed the portion of Galloway relied upon by the Examiner and has been unable to discern any teaching of a resin reinforcement tape made of a "warp-dominated" fiber material as recited in Claim 6. Instead, Col. 3, lines 45-53 of Galloway merely discusses that the cord fabric 15, which is similar to 14 (rubber impregnated tire cord tape), has warp yarns extending at a like angle to the mandrel axis. There is no teaching or suggestion in Galloway that the warp yarns dominate the fiber material. Accordingly, for at least the reasons set forth above, Galloway does not teach or suggest all the elements of

Claim 6. Since Galloway fails to teach or suggest each element of Claims 6, anticipation may not be found.

In regard to Claims 4, 5, 7 and 11, Applicant respectfully submits Claims 4, 5 and 7 depend from Claim 1 and Claim 11 depends from Claim 10. Thus, since Claims 4, 5, 7 and 11 incorporate the limitations of Claims 1 and 10, respectively, Galloway does not teach each element of the claims for at least the reasons discussed above with respect to Claims 1 and 10. Since each element of Claims 4, 5, 7 and 11 is not taught by Galloway, anticipation may not be found.

In view of the foregoing, it is respectfully requested that the final rejections of Claims 1, 4-7 and 10-11 under 35 U.S.C. §102 as being anticipated by Galloway be withdrawn.

III. Claims Rejected Under 35 U.S.C. §103

In the outstanding Final Action the Examiner rejects Claim 8 under 35 U.S.C. §103(a) as being obvious over Galloway, in view of Ewing et. al., U.S. Patent No. 4,023,834 ("Ewing"). Applicant respectfully traverses the rejections.

To establish a *prima facie* case of obviousness, the Examiner must show that the cited reference teaches or suggests every limitation of the claim such that the invention as a whole would have been obvious at the time the invention was made to one skilled in the art.

Claim 8 depends from Claim 1 and incorporates the limitations thereof. Thus, at least for the reasons discussed above with respect to Claim 1, Galloway fails to teach or suggest at least the element of a first and second pipe segment having a core and a composite reinforcement circumferentially surrounding the core as included in Claim 8. The Examiner has not pointed to, and Applicant is unable to discern, any portion of Ewing teaching this element. Thus, for the reasons set forth above, the relied upon

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references fail to teach or suggest at least this element of Claim 8. Since every element is not taught or suggested by Galloway in view of Ewing, a *prima facie* case of obviousness has not been established.

Moreover, the Examiner has improperly combined the references of Galloway and Ewing in attempting to render Claim 8 obvious. The Examiner alleges it would have been obvious to a person having ordinary skill in the art at the time the invention was made to substitute the nylon fibers of Galloway with glass fibers because they are equivalents. Applicant respectfully submits, knowledge that materials are equivalent would not motivate one of ordinary skill in the art to substitute nylon fibers for glass fibers because there would be no recognized advantage to making the substitution. The motivation and desire to modify what is already known arises when the modification will result in some sort of desired advantage or increased performance. By the Examiner's own admission, there would be no benefit to reconstructing Galloway in view of the teachings of Ewing. Thus, it is only upon viewing Applicant's disclosure that the desirability of using an isopolyester resin and glass fibers seated in the polyester resin is recognized. Such hindsight reconstruction is also not an appropriate basis for finding obviousness. Accordingly, even if it were possible to combine Galloway with Ewing to arrive at Applicant's invention, there is no motivation to do so.

For the foregoing reasons, Applicant respectfully requests reconsideration and withdrawal of the final rejection of Claim 8 under 35 U.S.C. §103(a) over Galloway in view of Ewing.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending are now in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any additional fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666. Questions regarding this matter should be directed to the undersigned at (310) 207-3800.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE

I hereby certify that this correspondence is being transmitted via facsimile No. (703)872-9306 to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on October 24, 2005.

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審査請求 未請求 発明の数 1 (全3頁)

⑮ 発明の名称 溶接鋼管の外面プラスチック被覆方法

⑯ 特 願 昭59-145198

⑰ 出 願 昭59(1984)7月11日

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明 細 書

1. 発明の名称

溶接鋼管の外面プラスチック被覆方法

2. 特許請求の範囲

(1) 半溶融状態のプラスチックの被覆物を、溶接ビード余盛を有する鋼管の外面に被覆する被覆方法において、溶接ビード上のプラスチック被覆層部分を母材部の被覆層よりも先に冷却して硬化を止め、しかも被覆体を冷却することを特徴とする溶接鋼管の外面プラスチック被覆方法。

3. 発明の詳細な説明

(産業上の利用分野)

本発明は、溶接鋼管の外面プラスチック被覆方法に関する。

(従来技術)

たとえば A W 法(サブマージドアーク溶接法)に製造される外径16～64インチの中大径の溶接鋼管に対する外面プラスチック被覆鋼管は、パイプライン用などに広く用いられている。この鋼管では、母材部からして、高い防食性が要求され

る。しかしながら、溶接鋼管は、図5図に示すように、鋼管Pの溶接ビードWBが鋼管P外面から突出して肉盛りされているため、しばしば防食性に問題になることが多い。これは、プラスチック被覆後の鋼管Pの溶接ビード部WBと母材部MCにおけるプラスチック被覆の厚み t_1 および t_2 は常に $t_1 > t_2$ となるためである。すなわち、ビード部WBの熱容量が他の部分よりも大いため、他の部分に比べ冷却速度が遅くなり、冷却時、プラスチック被覆の収縮によりビード上の被覆が矢印方向に引張られ剥離化するためである。

このような溶接ビード部肉化現象を防止する方法として、特公昭57-26928号公報および特開昭56-75827号公報に示されたものがある。これらはいずれもTダイスにより溶接ビードを有する鋼管に半溶融プラスチック溶融体をききつける態に、ビード突出部、溶接被覆段差換算部、溶接制御回路等の部置および機器を備えビード部および母材部をあらかじめそれぞれ設定された回転速

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度になるように速度制御することによって被覆後の溶接ビード部の薄肉化現象を防止するものであり、従って押出機のダイと金属管との間に厚薄調整装置を設け、プラスチック帯状体の厚みを局部的に薄くして溶接ビード部に被覆することにより、被覆後の溶接ビード部の薄肉化現象を防止するものである。

〔発明が解決しようとする問題点〕

前述した特公昭57-26928号公報および56-75827号公報においてはいずれもダイ法により台成断面被覆するものであり、溶接ビードおよび母材部における被覆厚の均一性がそれぞれ得られると述べているが、いずれも高価で複雑な制御装置および調整機構を必要とするものである。したがって、本発明においては、このような高価で複雑な制御装置や調整機構を必要とせずに、溶接鋼管のビード部および母材部のプラスチック被覆厚を一定にすることのできる溶接鋼管の外面プラスチック被覆方法の提供を目的としている。〔問題点を解決するための手段〕

上記問題点を解決するための本発明の要旨は、半溶融状態のプラスチックの被覆物を、溶接ビード余盛を有する鋼管の外周に被覆する被覆方法において、溶接ビード上のプラスチック被覆層部分を母材部の被覆層よりも先に冷却して硬化を早め、しかも被覆全体を冷却することを特徴とする溶接鋼管の外面プラスチック被覆方法である。

すなわち本発明においては、鋼管のプラスチック被覆後、溶接ビード上の被覆層部分を、全体の冷却に先立って冷却することによって、ビード部被覆プラスチックの硬化を早め、全体の冷却するものであり、被覆の冷却を均一化して被覆厚を均一化しようとするものである。

〔作用〕

本発明に従って、溶接ビード部分を先に冷却すると、その部分に溶接に伴って与えられた熱が放散され、他の部分と温度が均一化される。したがって、次いで被覆全体を冷却したとき、被覆の収縮力は周方向に均一に作用する。その結果、溶接ビード部の被覆の薄肉化が防止される。

〔発明の具体例〕

さらに本発明を第1図および第2図の具体例によって説明する。

直線的にライン上を搬送される鋼管Pに、まずプラスト処理を行い、密着性向上のための予備処理を行った後、次いで誘導加熱棒による加熱装置2によって100〜200℃程度に予熱する。その後、必要によりブライヤー処理（図がせず）を行った後、押出機3に連動されたクロスヘッドダイ4からポリエチレン等の熱可塑性プラスチックを約200℃で鋼管Pの外周に押出し被覆する。続いて、まず局部冷却装置5によって、溶接ビードW上の被覆プラスチック部分のみを冷却水Wによって局部冷却し、次に全体冷却装置6によって被覆鋼管全体を冷却する。

上記局部冷却装置5としては、たとえば図示のように、下流側開放の貯水ボックスaの下部にゴム板等のスカート5bをビード部の上方に設け、このスカート5bを被覆層7上に密着当接させたものを用いることができる。また、第3図のよう

に、ビード部が下向きの場合、冷却水噴出ノズル8を用いればよい。

上記例はダイを用いるクロスヘッドダイ法による被覆例であるが、もしスパイラル送りされる鋼管に対してダイによってプラスチック被覆を行うに當り、ビード部対応部分のみの局部冷却を行う場合、ビード部の移動に追従運動する冷却装置を用いればよい。

以上のよう、本発明によるとプラスチック被覆鋼管のビード部対応部分の冷却を、全体の全体冷却に先立って行うことにより、熱容量の大きいビード部の温度と全体の温度を均一化することができるので、ビード部での膜厚と母材部での膜厚とをほぼ同一とできる。したがって、ビード部での耐衝撃性を優れたものとすることができる。また局部加熱のたとえば両端部を有するポリエチレン樹脂を用いてもビード部から流れ去ることなく、よって所期の密着性が得られ、耐食性を向上させることができる。しかも、ビード部での膜厚減少分を見越した上で全体の膜厚を増肉させる必

要がないから、樹脂使用量を低減できると共に、押出機からの押出し速度を速め、被覆ライン速度を増すことができる。

〔実施例〕

次に実施例にて本発明を記述する。

第1図に示す方式をもって、 $20\text{mm} \times 8.61$ のSAW管を下記条件にてプラスチック被覆を行った。

鋼管予熱温度：180℃

ビード幅巾：23mm

ビード部余高：3mm

コーティング材料：ポリユチレン

プラスチック熔融温度：200℃

コーティング速度：3m/分

被覆膜厚：3mm

ビード部の事前冷却時間：0秒、6秒、10秒、

20秒

母材部の被覆厚みとビード被覆厚みとの差($t_1 - t_2$)とビード部のみの局部冷却による事前冷却時間(秒)との関係を図4図に示す。

図4図で明らかなように、ビード部の事前冷却

がないものは、母材部とビード部の膜厚差2mmとなるが、10秒以上ビード部を事前冷却すると0.3mm以下となり、被覆の均一化を図ることができる。

〔発明の効果〕

以上のように、本発明によると、高価で複雑な制御または調整装置を必要とすることなく、樹脂鋼管のプラスチック被覆膜厚を均一化することができる。

4. 図面の簡単な説明

第1図は本発明法の実施態様内の斜視図、第2図は局部冷却装置の断面図、第3図は他の例の断面図、第4図は実施例結果の膜厚差($t_1 - t_2$)とビード部事前冷却時間との関係図、第5図は従来の法によるプラスチック被覆溶接鋼管の被覆形状を示す要部断面図である。

P・・・溶接鋼管

WB・・・溶接ビード部

M・・・母材部

4・・・クロスヘッドダイ

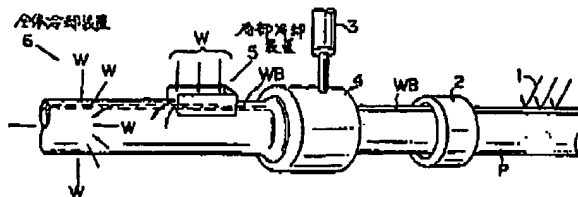
5、8・・・局部冷却装置

6・・・全体冷却装置

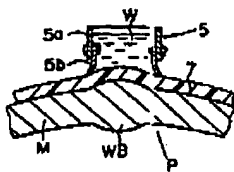
7・・・プラスチック被覆層

特許出願人 住友金属工業株式会社

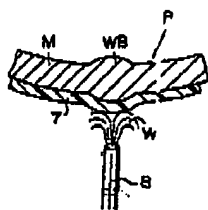
第1図



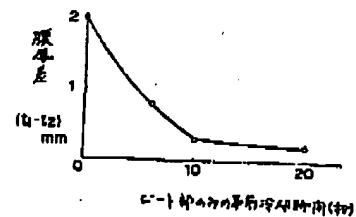
第2図



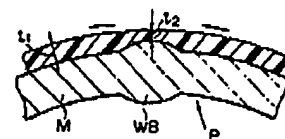
第3図



第4図



第5図



⑨ 日本国特許庁 (JP)

⑪ 実用新案出願公開

⑫ 公開実用新案公報 (U)

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審査請求 未請求

(全 3 頁)

⑮ 自動二輪車の前輪懸架装置における緩衝器の
取付構造

⑯ 実 願 昭55-50298

⑰ 出 願 昭55(1980)4月14日

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㉑ 代 理 人 弁理士 下田容一郎

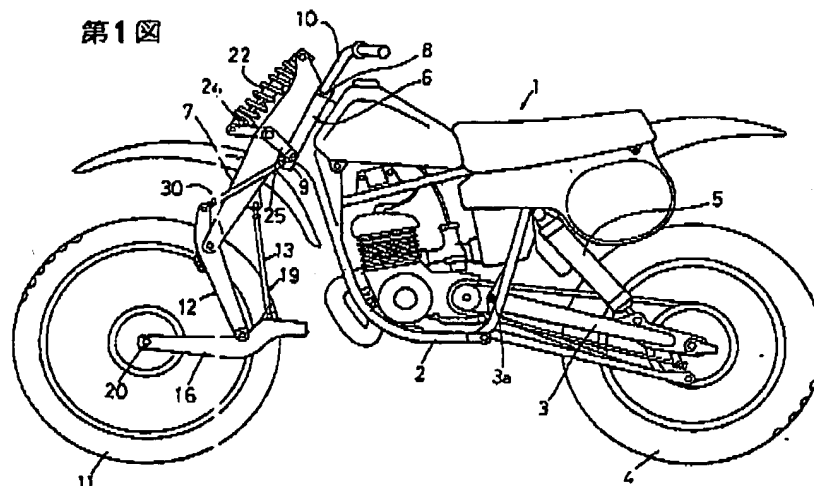
㉒ 実用新案登録請求の範囲

フロントフォークと前輪支持部材とを前後2本のアーム部材で連結して構成した側面四辺形リンク機構と、該リンク機構の変形作動により伸縮作動する緩衝器と、上記アーム部材の枢着連結部よりも前部に前輪支持部材に設けられた前輪車軸とからなる自動二輪車の車輪懸架装置において、上記緩衝器をヘッドチューブの前方に1本配置するとともに、チャンバー室が内部に形成された緩衝器の上部から左右に突出する突起部を上記フロントフォークの頂部に枢着結合したことを特徴とする自動二輪車の前輪懸架装置における緩衝器の取付構造。

図面の簡単な説明

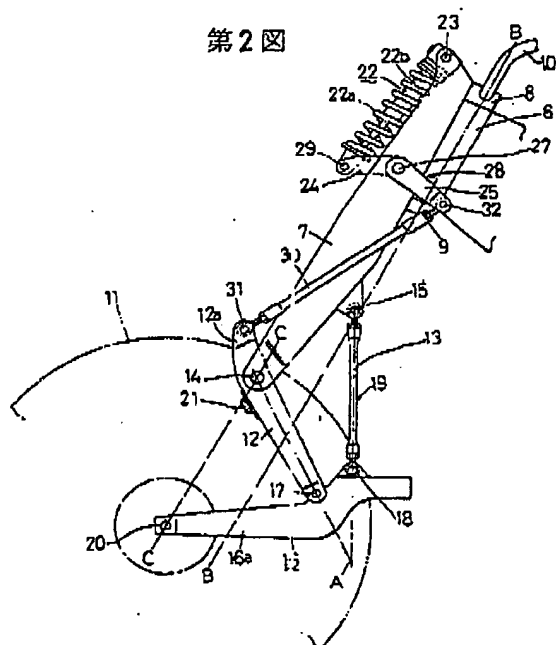
図面は本考案の一実施例を示し、第1図は自動二輪車の全体側面図、第2図はフロントフォーク部分の拡大図、第3図は同部分の斜視図、第4図は緩衝器の取付構造を示す正断面図、第5図は平面図、第6図は緩衝器の内部構造の半截縦断面である。

尚図面中、6はヘッドチューブ、7はフロントフォーク、12、13はアーム部材、16は前輪支持部材、19は側面四辺形リンク機構、20は車軸、22は緩衝器、44は緩衝器上部、45、46は突起部、Sはチャンバー室である。

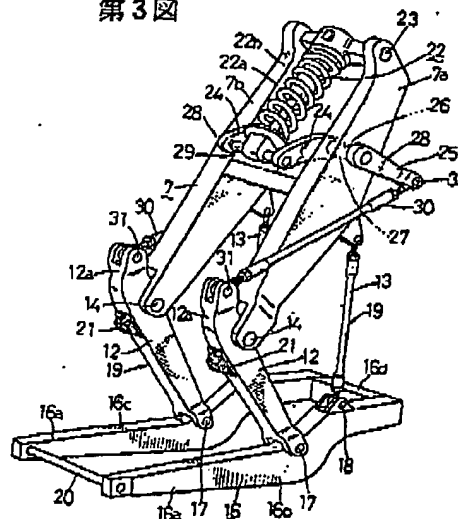


実開 船 5.6-150694(2)

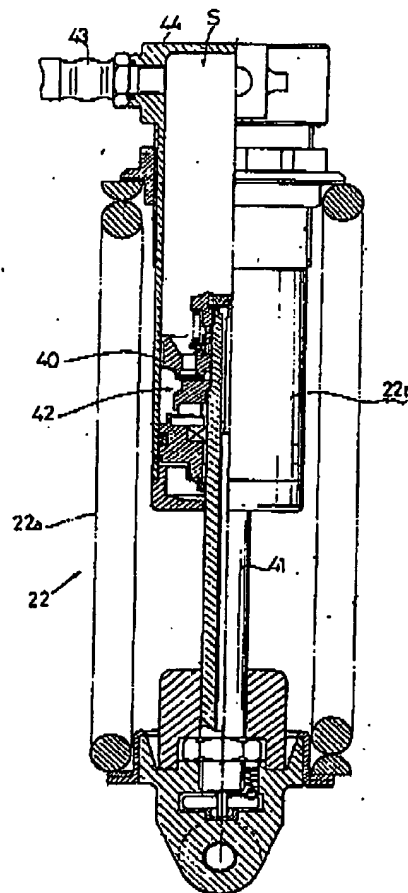
第2図



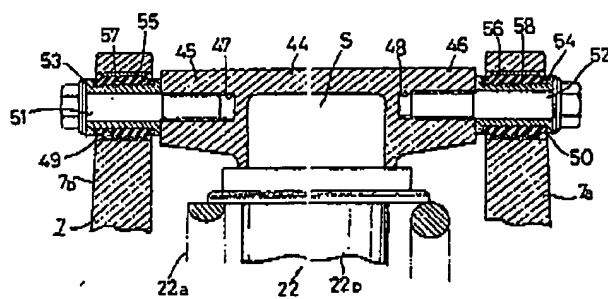
第3図



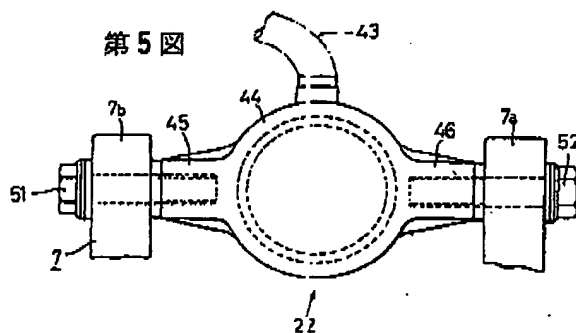
第6図



第4図



第5図

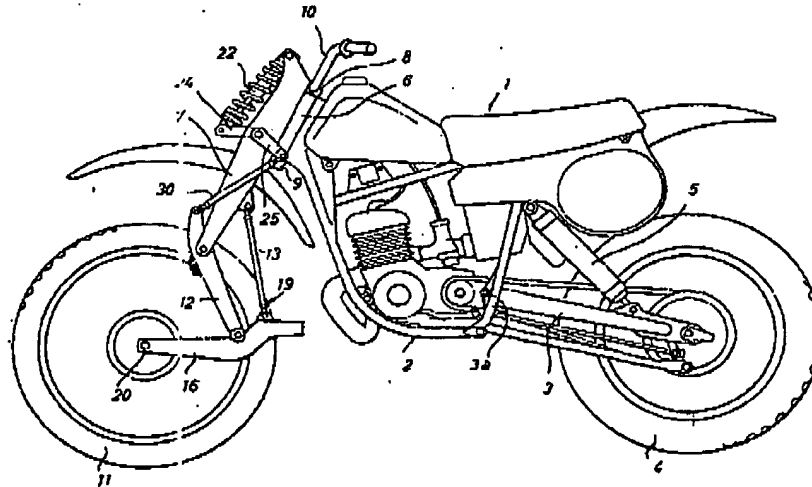


実開 昭56-150694(3)

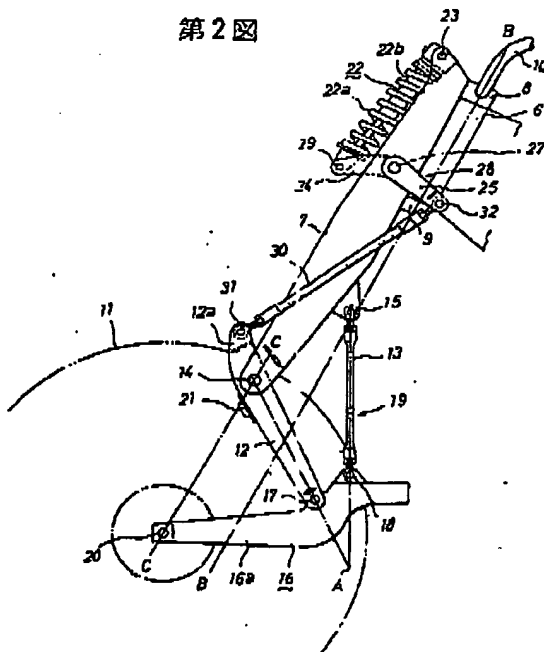
補正 昭55.7.2

図面を次のように補正する。

第1図



第2図



第3図

